TYPE TL068C
3-PIN VOLTAGE FOLLOWER WITH JFET INPUT

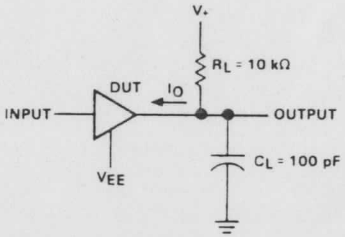
electrical characteristics, V_{EE} = −15 V, V_+ = +15 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNITS
V_{IO}	Input offset voltage	I_O = 2 mA			3	15	mV
I_{IB}	Input bias current		T_A = 25°C		30	400	pA
			T_A = 0°C to 70°C			10	nA
V_{IR}	Input voltage range	V_{EE} = −15 V, V_+ = 15 V, R_L = 10 kΩ		12 to −11.5	13.5 to −12		V
A_V	Large-signal voltage amplification	V_{EE} = −15V, V_+ = 15 V, R_L = 10 kΩ		0.999	0.9997		V/V
k_{SVR}	Supply voltage rejection ratio	V_{EE} = −15 V to +10 V		70	78		dB
k_{LCS}	Load-circuit sensitivity ($\Delta V_{IO}/\Delta I_O$)	I_O = 0.5 mA to 5 mA			2	4	mV/mA
I_{OS}	Short-circuit output current				25		mA
I_{EE}	Supply current				−125	−300	μA

operating characteristics, V_{EE} = −15 V, V_+ = 15 V, T_A = 25°C, R_L = 10 kΩ, C_L = 100 pF

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNITS
Bandwidth				1		MHz
Slew rate	V_O = ±10 V	Positive-going edge		7		V/μs
		Negative-going edge		100		
Rise time	V_O = 100 mV			130		ns
Overshoot				20%		

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT

TYPES TL070, TL070A, TL071, TL071A, TL071B, TL072, TL072A, TL072B, TL074, TL074A, TL074B, TL075 LOW-NOISE JFET-INPUT OPERATIONAL AMPLIFIERS

D2393, SEPTEMBER 1978 – REVISED SEPTEMBER 1983

19 DEVICES COVER COMMERCIAL, INDUSTRIAL, AND MILITARY TEMPERATURE RANGES

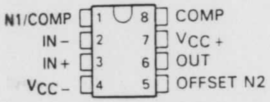
- Low Power Consumption
- Wide Common-Mode and Differential Voltage Ranges
- Low Input Bias and Offset Currents
- Output Short-Circuit Protection
- Low Total Harmonic Distortion 0.003% Typ
- Low Noise . . . Vn = 18 nV/$\sqrt{\text{Hz}}$ Typ
- High Input Impedance . . . JFET-Input Stage
- Internal Frequency Compensation (Except TL070, TL070A)
- Latch-Up-Free Operation
- High Slew Rate . . . 13 V/μs Typ
- Common mode input voltage range includes Vcc+

description

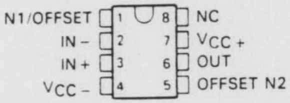
The JFET-input operational amplifiers on the TL07_ series are designed as low-noise versions of the TL08_ series amplifiers with low input bias and offset currents and fast slew rate. The low harmonic distortion and low noise make the TL07_ series ideally suited as amplifiers for high-fidelity and audio preamplifier applications. Each amplifier features JFET-inputs (for high input impedance) coupled with bipolar output stages all integrated on a single monolithic chip.

Device types with an "M" suffix are characterized for operation over the full military temperature range of −55°C to 125°C, those with an "I" suffix are characterized for operation from −25°C to 85°C, and those with a "C" suffix are characterized for operation from 0°C to 70°C.

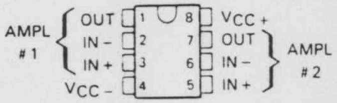
TL070, TL070A
D, JG, OR P DUAL-IN-LINE PACKAGE
(TOP VIEW)



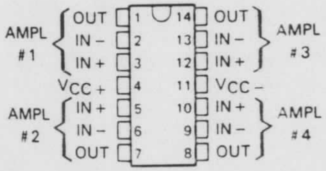
TL071, TL071A, TL071B
D, JG, OR P DUAL-IN-LINE PACKAGE
(TOP VIEW)



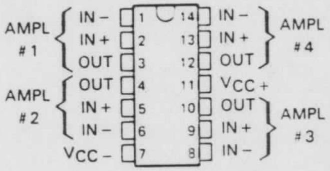
TL072, TL072A, TL072B
D, JG, OR P DUAL-IN-LINE PACKAGE
(TOP VIEW)



TL074, TL074A, TL074B
D, J, OR N DUAL-IN-LINE
OR W FLAT PACKAGE
(TOP VIEW)

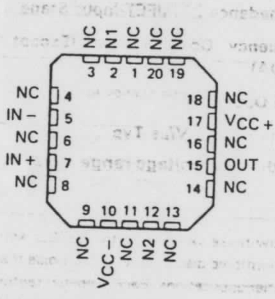


TL075
N DUAL-IN-LINE PACKAGE
(TOP VIEW)

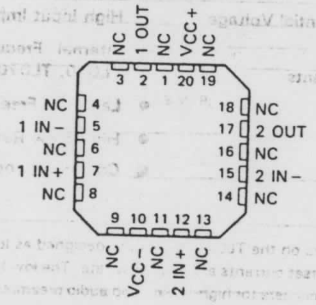


NC – No internal connection

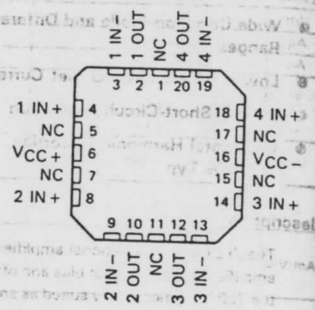
TL071
FK CHIP-CARRIER PACKAGE
(TOP VIEW)



TL072
FK CHIP-CARRIER PACKAGE
(TOP VIEW)

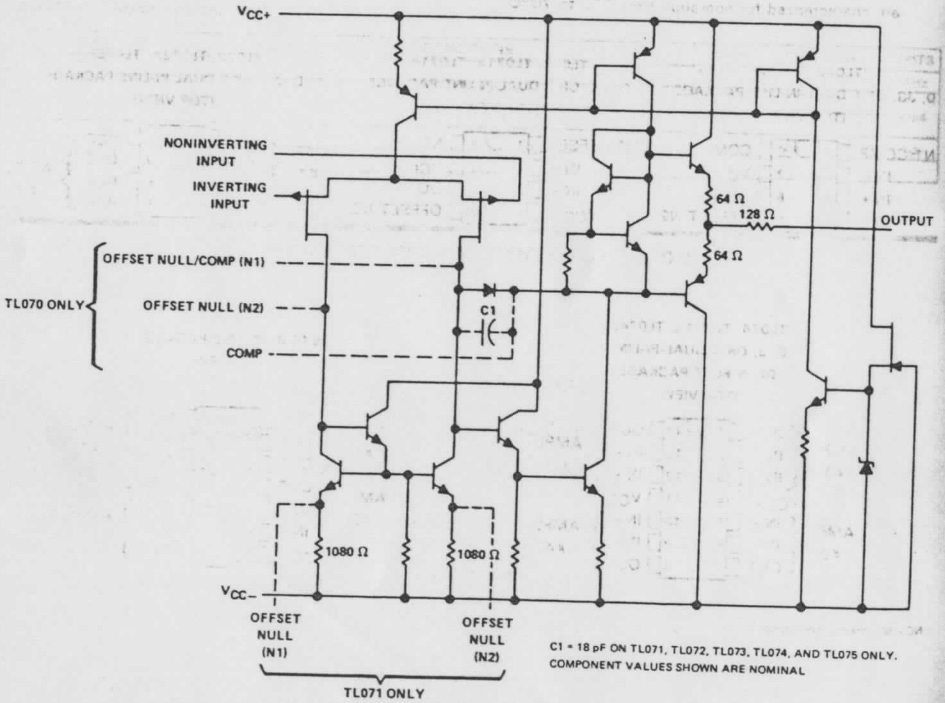


TL074
FK CHIP-CARRIER PACKAGE
(TOP VIEW)



NC — No internal connection

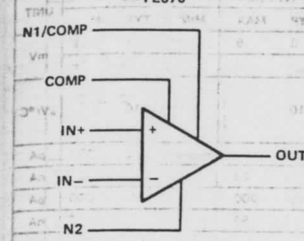
schematic (each amplifier)



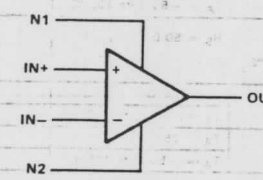
C1 = 18 pF ON TL071, TL072, TL073, TL074, AND TL075 ONLY.
COMPONENT VALUES SHOWN ARE NOMINAL

symbols

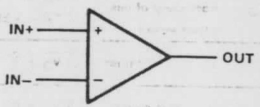
TL070



TL071



TL072 (EACH AMPLIFIER)
TL074 (EACH AMPLIFIER)



DEVICE TYPES, SUFFIX VERSIONS, AND PACKAGES					
	TL070	TL071	TL072	TL074	TL075
TL07_M	*	FK, JG	FK, JG	FK, J, W	*
TL07_I	D, JG, P	D, JG, P	D, JG, P	D, J, N	*
TL07_C	D, JG, P	D, JG, P	D, JG, P	D, J, N	N
TL07_AC	D, JG, P	D, JG, P	D, JG, P	D, J, N	*
TL07_BC	*	D, JG, P	D, JG, P	D, J, N	*

*These combinations are not defined by this data sheet.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

		TL07_M	TL07_I	TL07_C TL07_AC TL07_BC	UNIT
Supply voltage, V_{CC+} (see Note 1)		18	18	18	V
Supply voltage, V_{CC-} (see Note 1)		−18	−18	−18	V
Differential input voltage (see Note 2)		±30	±30	±30	V
Input voltage (see Notes 1 and 3)		±15	±15	±15	V
Duration of output short circuit (see Note 4)		unlimited	unlimited	unlimited	
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 5)		680	680	680	mW
Operating free-air temperature range		−55 to 125	−25 to 85	0 to 70	°C
Storage temperature range		−65 to 150	−65 to 150	−65 to 150	°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds	J, JG, FK, or W package	300	300	300	°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	D, N, or P package		260	260	°C

NOTES: 1. All voltage values, except differential voltages, are with respect to the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at the noninverting input terminal with respect to the inverting input terminal.
3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
4. The output may be shorted to ground or to either supply. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.
5. For operation above 25°C free-air temperature, refer to Dissipation Derating Curves, Section 2. In the J and JG packages, TL07_M chips are alloy-mounted; TL07_I, TL07_C, TL07_AC, and TL07_BC chips are glass mounted.